Reactions

(1) $(COOH)_2 + Na_2CO_3 \longrightarrow (COONa)_2 + H_2CO_3$ → $CO_2 + H_2O$

(2) $HO-CH(COOH)-CH_2-COOH + Na_2CO_3 \longrightarrow HO-CH(COONa)-CH_2-COONa + H_2O + CO_2\uparrow$

(3) $HO-C(CH_2-COOH)_2-COOH + Na_2CO_3 \longrightarrow HO-C(CH_2-COONa)_2-COOH + H_2O + CO_2$

(4) $(COOH)_2 + CaCl_2 \longrightarrow (COO)_2Ca + 2HCl\uparrow$

(5) $HO-CH(COOH)-CH_2-COOH + CaCl_2 \xrightarrow[\text{warming}]{\Delta} HO-CH(COO)-CH_2-COO\,Ca + 2HCl$

(6) $HO-C(CH_2-COOH)_2-COOH + CaCl_2 \xrightarrow[\text{boiling}]{\Delta} HO-C(CH_2-COO)_2-COOH\,Ca + 2HCl\uparrow$

(7) N-5

$(COOH)_2 + 2NH_4OH \longrightarrow (COO-NH_4)_2 + 2H_2O$

$(COONH_4)_2 + CaCl_2 \xrightarrow{\text{Cold}} (COO)_2Ca + 2NH_4Cl$

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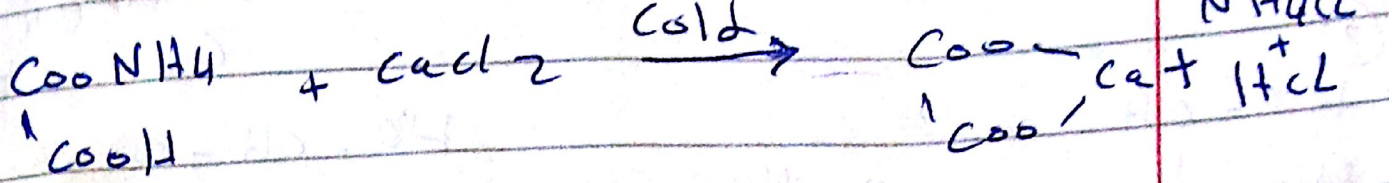
8



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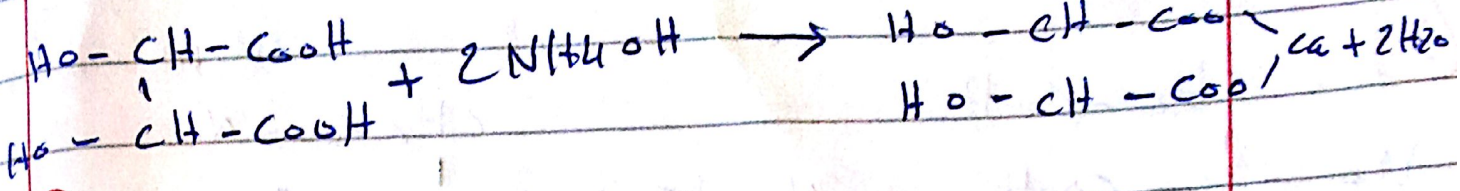

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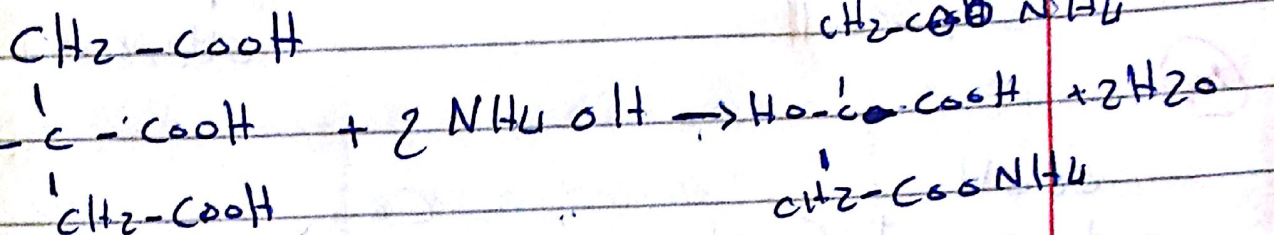
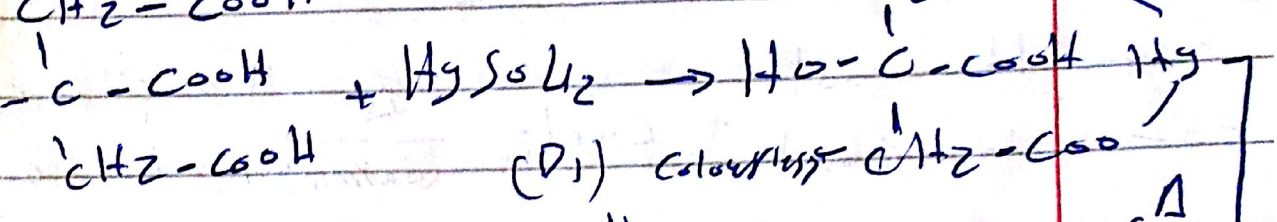
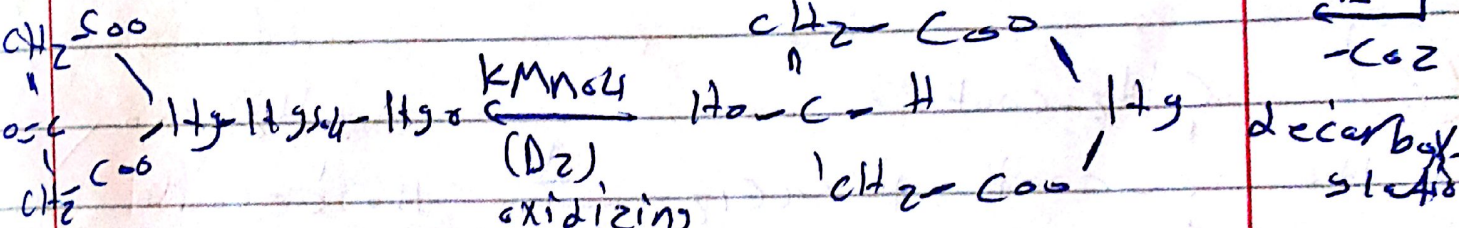
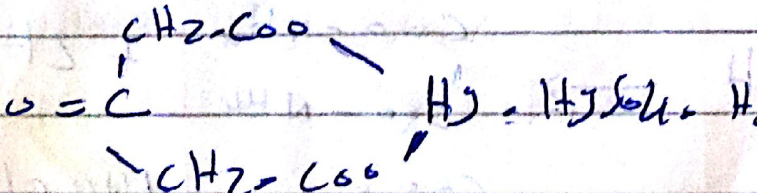


11 Dengie's Test







mercuric salt of dicarboxyacetone

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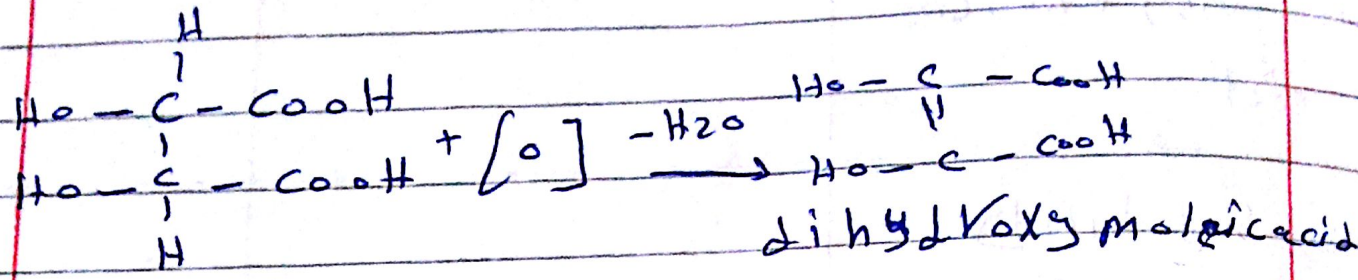
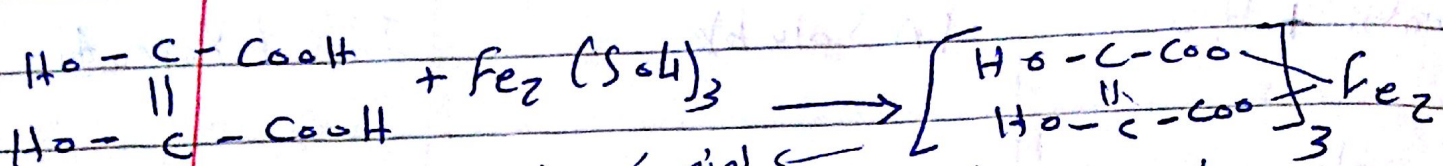
Fenton's Test

$$FeSO_4 + H_2O_2 \longrightarrow Fe_2(SO_4)_3 + H_2O + [O]$$

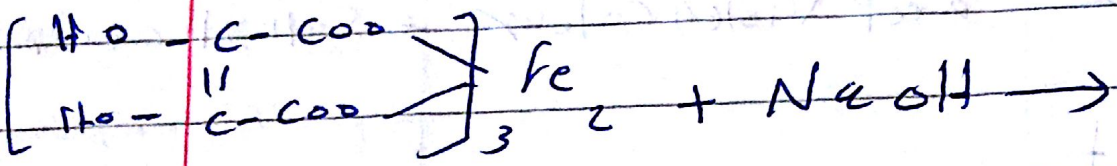


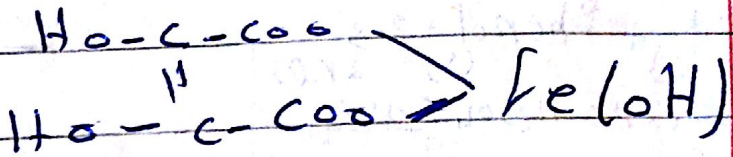
dihydroxy maleic acid



لونه غير واضح
غير ثابت

ferric salt of dihydroxy maleic acid





violet colour

Basic form of ferric salt of dihydroxy malic acid

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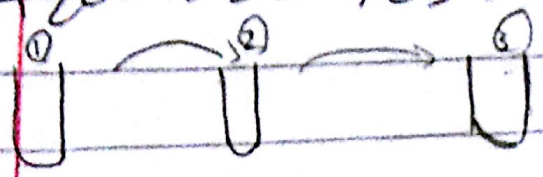
6) Azo-dye Test [Salicylic acid]

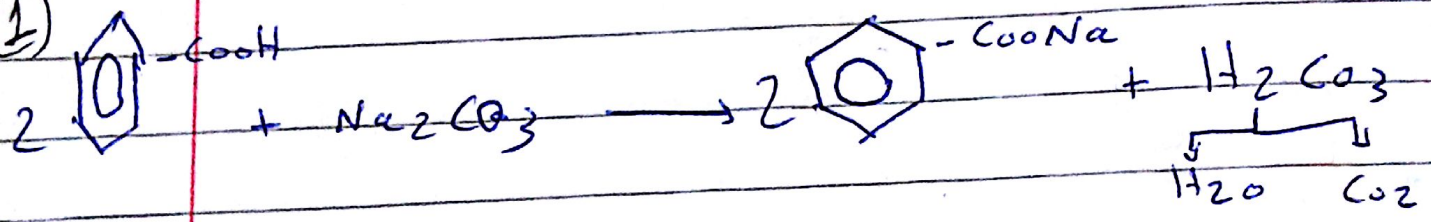


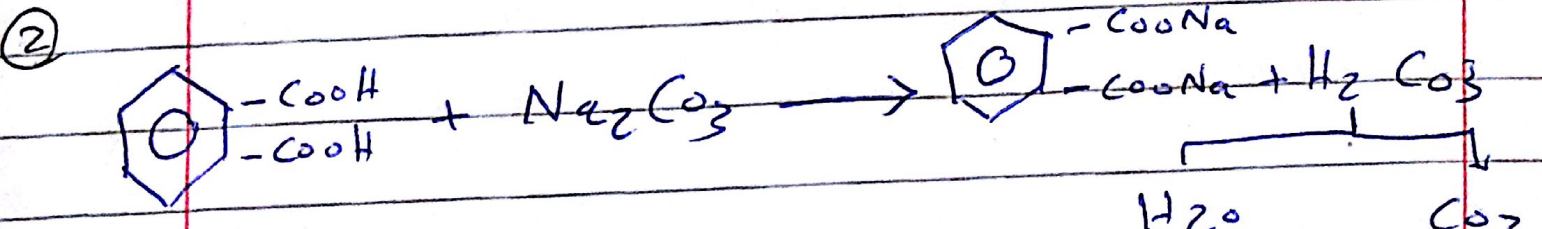
aniline hydrochloride (soln.) | $NaNO_2$ (soln.) | unknown(s) + $NaOH$

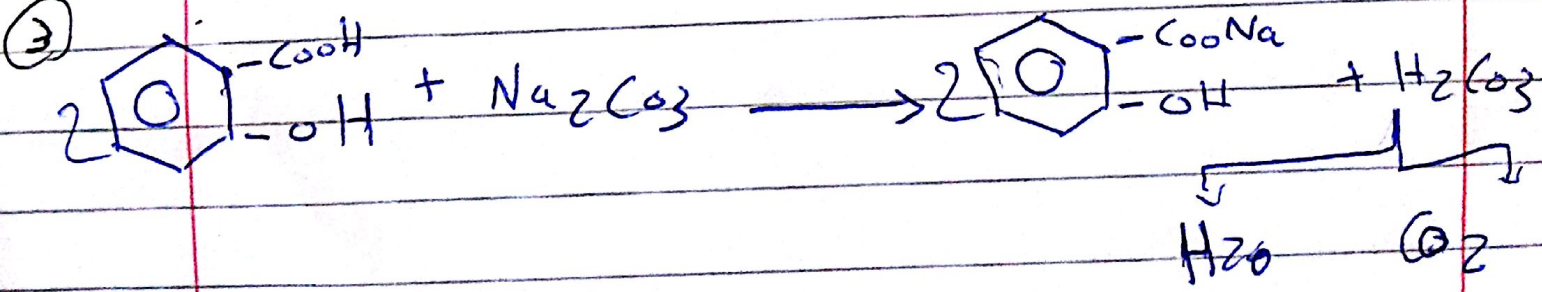
* Put 3 tubes in ice bath (10 min) → add ① on ② → Then add mix to ③
Give ! Red-orange dye

It's salicylic acid

Some Reactions

1) 

2) 

3) 

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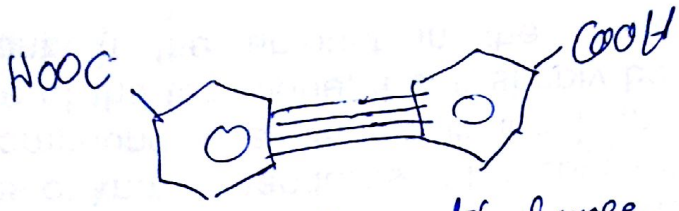
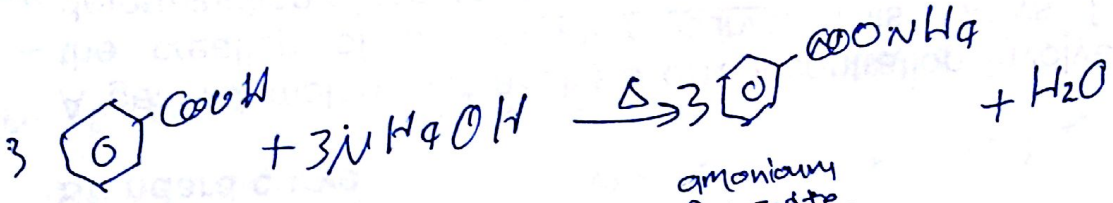
Mechanisms of Aromatic Acid.

(1)

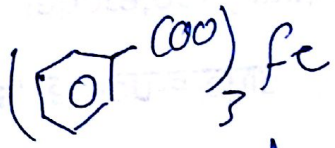


Vandawels force

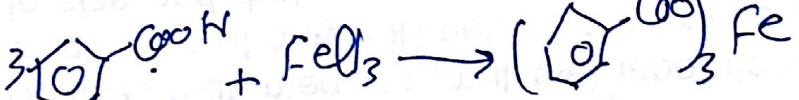


ammonium Benzoate

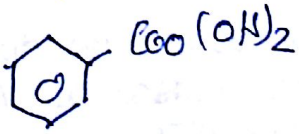
$\xrightarrow{FeCl_3}$

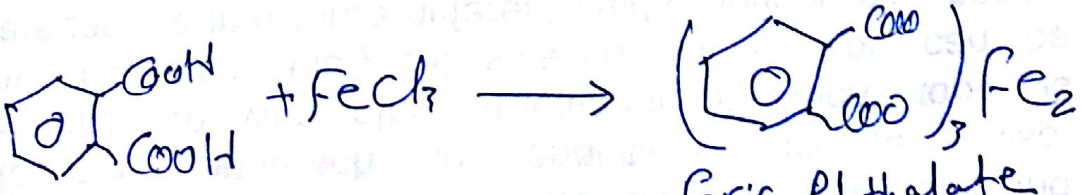


Feric Benzoate



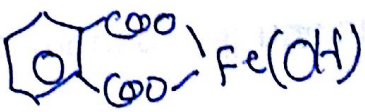
$\xrightarrow{NaOH}$





Feric Phthalate

$\xrightarrow{NaOH}$



Basic

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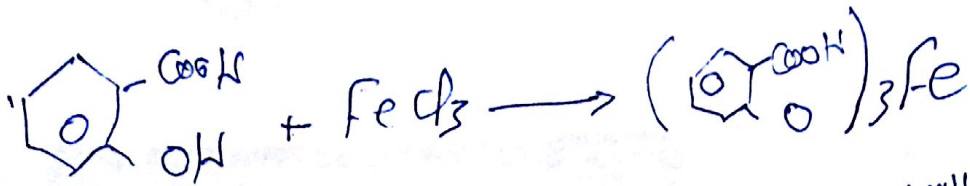
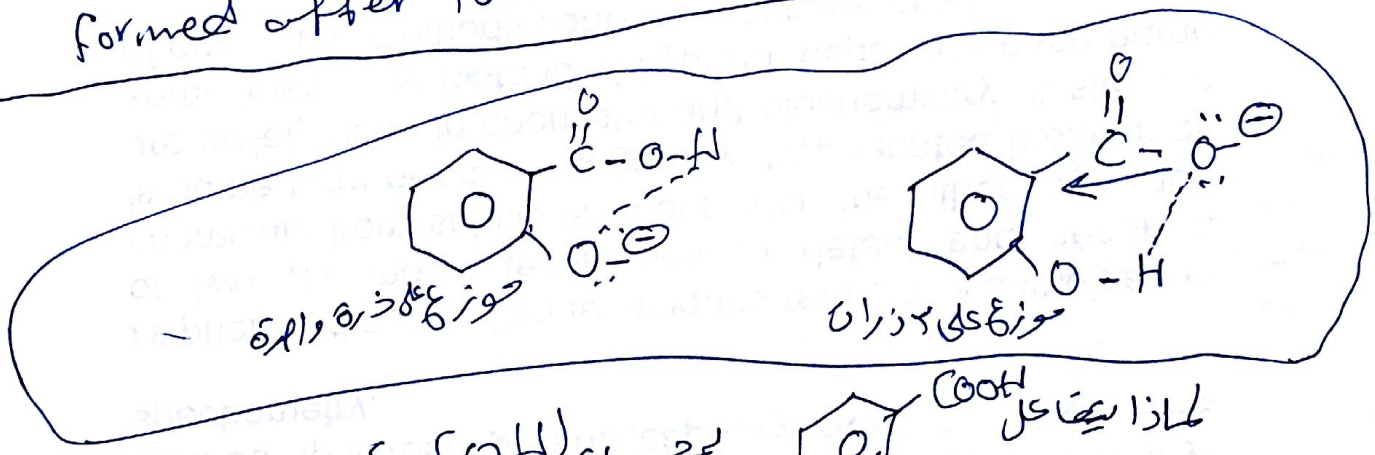
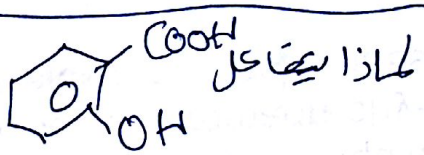


Salicylic acid isn't aphenol??

Ans/ Due to the stabity of conjorded base formed after losing proton of (COOH) is more than stability of that formed after lossing proton from (OH)



5. (OH) مجموعة



1- Due to electron density is distributed on 1 atom incase of (OH) but on 3 atoms incase of (COOH)

2- formation of hydrogen bond between (OH) and (COOH)

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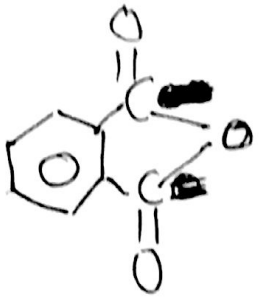
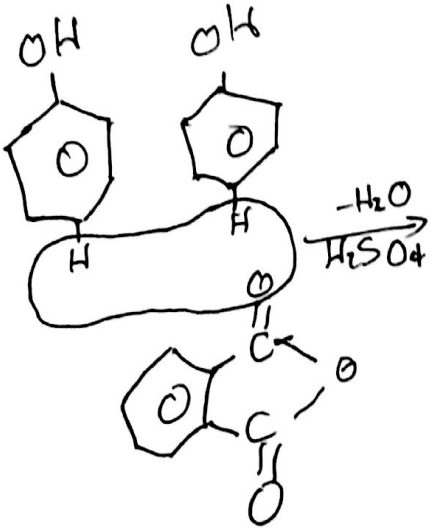
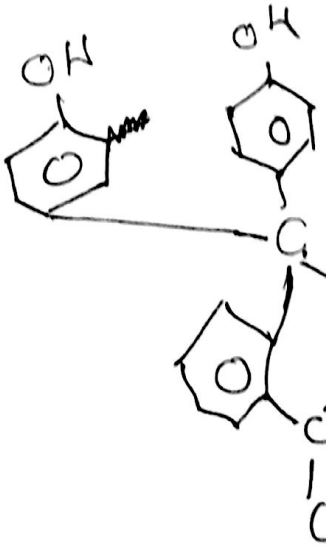
Phy thalin test



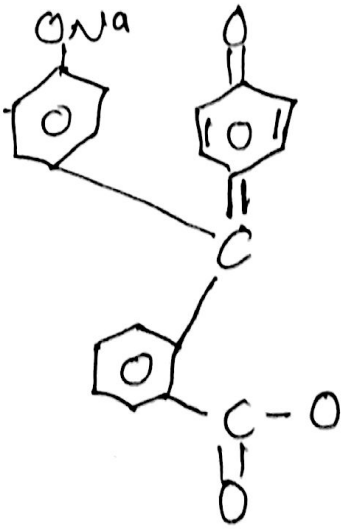
Phythalic anhydrite





Phenal Phthalein

Acidic Colorless



Basic

Pink

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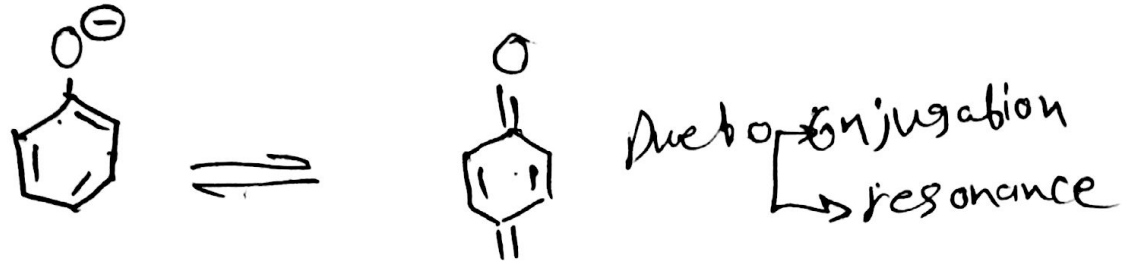
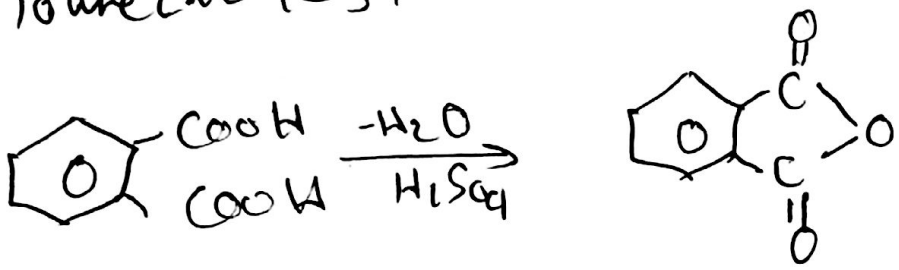
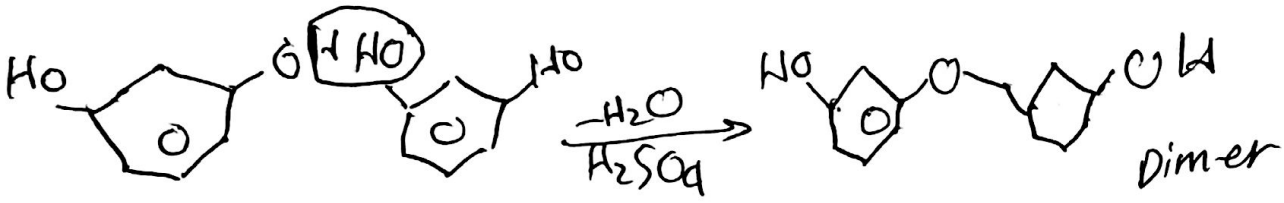


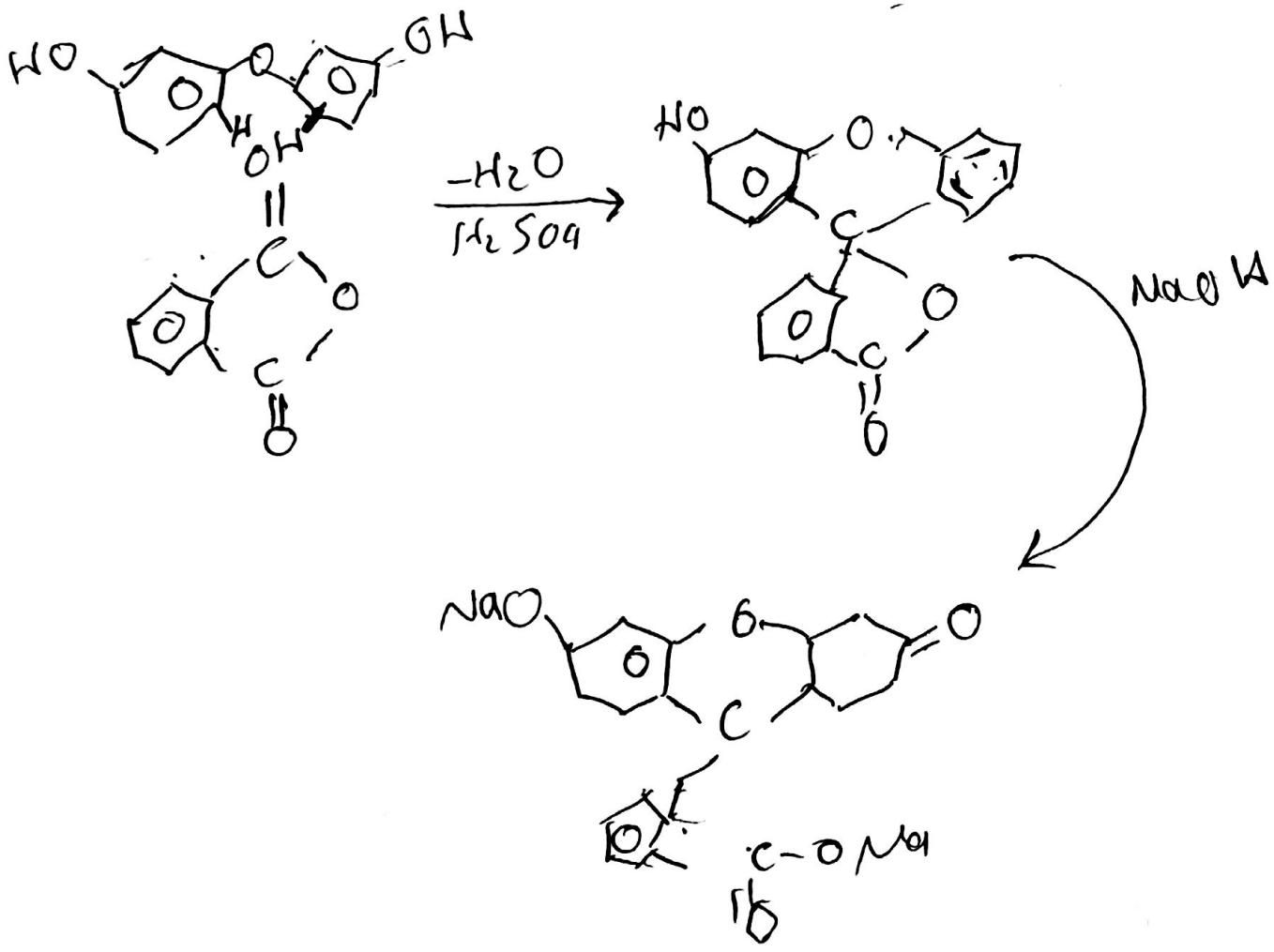
Benzoide structure

quinonoide structure

Flourecne test







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(١) عمل مجموعة

* Scheme of Aliphatic ACids *

Test	Oxalic acid	Tartaric acid	Citric acid
① ACidity test ACid (soln) + Na_2CO_3 (S or soln) →	effervescence and CO_2 gas evolution	eff. with evolution of CO_2 gas ↑	eff. with evolution of CO_2 gas
② solubility test ACid (solid) + H_2O —shake well on Cold→	soluble	Soluble	soluble
③ $CaCl_2$ test aCid (soln or N.S) + $CaCl_2$ (soln) →	white ppt on Cold	white ppt on warming or scratching	white ppt on boiling (or heating for long time)
④ Dengic's test Cid (soln or N.S) + $HgSO_4$ (D_1) —heating→ Then add $KMnO_4$ (D_2) drop by drop on The wall of tube	white ppt after adding (D_1) $HgSO_4$ only	DeColorization of violet Colour of Permengnate	DeColorization of violet Colour and heavy white ppt is formed
⑤ Fenton's test ACid (Concentrated soln.) + Freshly prepared $FeSO_4$ (Conc. soln) + drops of H_2O_2 → Then add double Volume of NaOH (Conc. NaOH soln)	-ve	Violet Colour	-ve

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Scheme of Aromatic acids

Test	Benzoic acid	Phthalic acid	Salicylic acid
① Acidity Test acid soln. + Na_2CO_3 → (heat)	eff. and CO_2 gas evolution	eff. and CO_2 gas evolution	eff. and CO_2 gas evolution
② Solubility Test	Insoluble	Insoluble	Insoluble
③ $FeCl_3$ Test :- Acid (s) + NaOH (or N.S of acid) → add $FeCl_3$ (soln.)	Buff ppt	Buff ppt	deep violet Colour ↓ don't Make phthalien or Fluorscence
④ Phthalien Test :- Acid (s) + Phenol (s) + 2-3 drops of Conc. H_2SO_4 $\xrightarrow{fusion}$ add the molten in beaker Contains excess NaOH	-ve	Pink Colour	⑥ Azo-dye Test :- (salicylic acid) ① aniline hydrochloride soln. ② $NaNO_2$ soln. ③ unknown (s) + NaOH → Put 3 tubes in ice bath (1 min.) → add ① on ② → Then add mix. to ③ Give Red-orange dye
⑤ Fluorscence Test :- Acid (s) + Resorcinol (s) + 2-3 drops of Conc. H_2SO_4 $\xrightarrow{fusion}$ add the molten in beaker Contains excess NaOH	-ve	green flourscence Colour	

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Scheme of Phenols

Test	Catechol	Resorcinol	α-Naphthol	β-Naphthol
① Acidity Test	-ve	-ve	-ve	-ve
② Solubility Test Phenol (s) + H_2O $\xrightarrow{\text{shake well}}$	soluble	Soluble	InSoluble	Insoluble.
③ $FeCl_3$ Test :- *In Case of soluble Phenol :- Phenol (soln.) + $FeCl_3$ $\longrightarrow$ *In Case of Insoluble phenol :- Phenol (s) + NaOH $\longrightarrow$ add $FeCl_3$	green Violet Colour	Violet Colour	Violet Colour	Light green - Violet slowely
④ Azo-dye Test	-ve	Red dye	Brownshed Red dye	Scarlet Red dye

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